

of the main body, while leaving some portions of the main body inner surface uncovered by silicone gel layer.

6. The liner garment of claim 5, wherein the silicone gel layer comprises multiple strips of silicone gel material.

7. The liner garment of claim 1, wherein a proximal portion of the main body and the gel cup form two internal compartments within an interior of the liner garment, the two compartments comprising:

- a breathable proximal internal compartment; and
- a distal hermetically sealed internal compartment.

8. The liner garment of claim 1, wherein the main body comprises a layer of foam disposed between two layers of fabric.

9. The liner garment of claim 8, wherein the foam layer comprises neoprene.

10. The liner garment of claim 1, wherein the gel cup comprises a material selected from the group consisting of silicone gel, urethane gel and thermoplastic elastomer gel.

11. The liner garment of claim 1, wherein the gel cup is attached to the inner surface of the main body at its distal end and does not extend all the way to the proximal end of the main body.

12. The liner garment of claim 11, wherein the total gel cup length is no greater than 170 millimeters.

13. The liner garment of claim 1, wherein the main body comprises a woven fabric having a biased elasticity that allows a proximal portion of the main body to stretch circumferentially not vertically.

14. The liner garment of claim 1, wherein the at least one support material layer comprises a pattern of polyurethane laminated on the outer surface of the main body.

15. The liner garment of claim 1, wherein the at least one support material layer comprises a pattern of polyurethane integrated into the main body such that it is exposed on the outer surface.

16. The liner garment of claim 1, wherein the at least one support material layer comprises non-stretch webbing applied to the outer surface of the main body.

17. The liner garment of claim 1, further comprising at least one additional support material layer applied to the inner surface of the main body.

18. The liner garment of claim 17, wherein the at least one additional support material layer comprises non-stretch webbing applied to the internal surface.

19. The liner garment of claim 1, wherein at least one support material layer comprises a brace member disposed over part of the outer surface of the main body.

20. The liner garment of claim 19, wherein the brace member comprises at least one tensioning member.

21. The liner garment of claim 1, further comprising a hard, supportive umbrella attached to the outer surface of the distal end of the main body.

22. The liner garment of claim 21, wherein the umbrella has a concave proximal surface that conforms to the outer surface of the distal end of the main body.

23. The liner garment of claim 22, wherein the umbrella has a pentagonal shape, and wherein five points of the pentagonal shape are disposed over five centrally converging seams of the distal end of the main body.

24. The liner garment of claim 21, wherein the umbrella comprises:

- a distal surface; and
- multiple radiating ribs disposed on the distal surface, wherein the ribs are configured to engage a comple-

mentary set of slots disposed on a proximal surface of a distal funnel on a distal-most aspect of a cavity of a prosthetic socket.

25. The liner garment of claim 21, wherein the umbrella comprises a contact surface in contact with the distal end of the main body, and wherein the contact surface has an area of between 15.9 cm² and 29.2 cm².

26. The liner garment of claim 21, further comprising a distal funnel configured for placement at a distal-most end of a cavity of the prosthetic socket.

27. The liner garment of claim 26, wherein the distal funnel comprises a proximal surface, having a set of teeth and intervening slots configured to complement a shape of radiating ribs disposed on a distal surface of the umbrella.

28. The liner garment of claim 1, further comprising a cable-based tensioning mechanism disposed over at least part of the outer surface of the main body.

29. The liner garment of claim 28, wherein a cable of the cable-based tensioning mechanism is enclosed in a plastic sheath adhered to the outer surface of the main body by one or more layers of thermoplastic.

30. The liner garment of claim 28, wherein the cable-based tensioning mechanism is disposed within a fabric layer of the main body and arranged in multiple circumferential loops around the main body.

31. A liner garment system for a prosthetic socket configured to accommodate a residual limb of a patient, the system comprising:

- a main body, comprising an elastic, fluid permeable material layer extending around a full circumference of the liner garment and having an inner surface, an outer surface, a closed distal end and an open proximal end for accepting the residual limb of the patient;
- a fluid impermeable gel cup positioned on the inner surface of the main body at its distal end, wherein the gel cup is configured to accommodate a distal end of the residual limb and does not extend to the proximal end of the main body;

at least one support material layer on a portion of the outer surface of the main body, wherein the at least one support material layer comprises a material that is less elastic than the fluid permeable material layer of the main body;

a supportive umbrella attached to the outer surface of the distal end of the main body; and

a distal funnel configured for placement at a distal-most end of a cavity of the prosthetic socket, wherein the distal funnel comprises a proximal surface that is complementary in shape to a distal surface of the umbrella.

32. The system of claim 31, wherein the at least one support material layer comprises a pattern of multiple semi-elastic strips disposed around the circumference of the liner garment.

33. The system of claim 32, further comprising multiple inelastic strips disposed on outer surfaces of at least some of the semi-elastic strips.

34. The system of claim 31, further comprising a silicone gel layer disposed in a pattern on the inner surface of the main body.

35. The system of claim 31, wherein the main body comprises a layer of neoprene disposed between two layers of fabric.